Eucalyptus calyerup (Myrtaceae), a new species of possible hybrid origin from south-western Australia

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Abstract

McQuoid, N.K. and Hopper, S.D. *Eucalyptus calyerup* (Myrtaceae) a new species of possible hybrid origin from south-western Australia. *Nuytsia* 15(1): 63–68 (2002). *Eucalyptus calyerup* McQuoid & Hopper is described and illustrated. It appears to be of possible hybrid origin, but morphologically stable, with the putative parents being *Eucalyptus occidentalis* Endl. and *E. platypus* Hook. subsp. *platypus*. It is endemic to the Calyerup Rocks area near Jerramungup in Western Australia and has aroused much interest from landcare groups. It is rare in the wild and in need of monitoring.

Introduction

By early 1994 approximately 133 putative *Eucalyptus* hybrids were included in the collection of the Western Australian Herbarium (Hopper 1995). More have been added since then, including the subject of this paper. Few of the putative hybrids have been critically investigated to determine their status by, for example, documenting segregation of parental characters under greenhouse conditions (e.g. Beard 1974), documenting partial sterility and indiscriminate pollinators (e.g. Hopper *et al.* 1978), and applying DNA fingerprinting to test for additive genetic inheritance (Rosetto *et al.* 1997.

Eucalyptus occidentalis Endl. and *E. platypus* Hook. subsp. *platypus* often hybridise when they grow together, usually producing a few first generation hybrids with low fertility and intermediate characteristics in their fruits, buds, leaves, seeds, stature and bark. The taxon described here as *E. calyerup* resembles these hybrids in morphology but differs by occurring as a discrete population of many hundreds of plants and displaying high fertility and uniformity in seed, seedling and adult leaf morphology. Evidence supporting this uniformity is from some 67,000 seedlings that have been grown and planted for landcare works in the Jerramungup district, showing very little variation.

The morphological uniformity of *E. calyerup*, together with its growing importance in landcare, commends recognising it as a new species. Its status as a possible hybrid needs further investigation. It appears to be the product of an old hybridisation event because no *E. platypus* subsp. *platypus* occurs near either of its known populations, yet *E. calyerup* exists as a uniform group interspersed with *E. occidentalis*. Backcrossing with *E. occidentalis* may be occurring and further work is required to ascertain this.

Description

Eucalyptus calyerup McQuoid & Hopper, *sp. nov.*

A *Eucalypto occidentali* Endl. cortice laxe aspero in parte inferiore trunci, foliis brevioribus crassioribusque, et pedicellis pedunculisque brevioribus crassioribusque differt.

Typus: south of Calyerup Rocks, 200 m south-west of old miners camp, 33°57'S, 119°05'E, Western Australia, 1 September 2002, *N.K McQuoid* 575 (*holo:* PERTH; *iso:* ALB, CANB, PERTH).

Tree erect, to 10 m tall, without or rarely with a lignotuber. Bark in a short finely rough and dark grey stocking 100–700 mm long, decorticating and pale smooth matt cream to pale pink above stocking. *Pith glands* present. *Seedling leaves* alternate, ovate, 55–65 mm long, 36–42 mm wide, dull, blue-green. *Adult leaves* petiolate, alternate, obovate to elliptic-lanceolate, 45–77 mm long, 15–36 mm wide, glossy, pale green, veins prominent, reticulation sparse. *Inflorescences* axillary, unbranched, erect, 7-flowered; peduncle slightly down-curved, flattened and broad, 25–35 mm long. *Buds* shortly pedicellate, erect to curved down, elongated, 25–33 mm long, 6–8 mm wide, scar noticeable, operculum narrower than hypanthium, stamens erect. *Flowers* creamy yellow. *Fruit* shortly pedicellate, erect or sometimes curved down, very slightly campanulate, noticeably two-winged, 14–17 x 9–12 mm, rim thick, disc level to descending; valves 4, slightly exserted. *Seeds* dark brown, compressed ovoid, with distinct reticulum, 1.3–1.5 mm long, 0.8–1.0 mm wide, 0.7–0.8 mm thick (Figure 1)

Other specimens examined. WESTERN AUSTRALIA: Calyerup Rocks, 20 km E of Jerramungup, 6 Nov. 2000, *N.K. McQuoid* 561 (PERTH); S of Calyerup Rocks, at old miners camp, 33°57'S, 119°05'E, 4 May 2002, *N.K. McQuoid* 573 (ALB, PERTH); W of Calyerup Rocks, 300 m S of Old Ongerup Track, 33°55'S, 119°05'E, 1 Sep. 2002, *N.K. McQuoid* 576 (ALB, CANB, PERTH); S of Calyerup Rocks, at old miners camp, 33°57'S, 119°0S'E, 5 Oct. 2002, *N.K. McQuoid* 577 (ALB, CANB, PERTH).

Distribution and habitat. Known only from around granite rocks near Calyerup Rocks, 20 km east of Jerramungup in south west of Western Australia. It co-dominates woodland with *Eucalyptus occidentalis* and *Allocasuarina huegeliana.* Soil is pale brown sandy loam. Calyerup Creek drains to the south to the west of the area. (Figure 2)

Flowering period. October to December.

Conservation status. Conservation Codes for Western Australian Flora: Priority One. Two known populations, the main population where there are at least several hundred plants in close proximity, the other population extending two kilometres northwards and comprising widely scattered individuals. Current tenure is unallocated Crown land over which mining exploration leases occur. However, the location of *E. calyerup* is away from the minerals subject to exploration activity. The area also supports the endangered dasyurid marsupial *Phascogale calura* adding to its conservation need. Fire regimes where burn frequency intervals are less than 15 to 20 years could also impact the conservation of this obligate seeder taxon. Further searches may find it located nearby.

Etymology. The specific epithet refers to the Nyoongar Aboriginal name for the granite rock area that it comes from – Calyerup Rocks. Calyerup Rocks are a place of significant cultural and spiritual interest to Nyoongar people as well as heritage interest to the wider community.

Figure 1. *Eucalyptus calyerup*. A – eight month old planted seedling; B – tree at Calyerup Rocks, showing short loose stocking and smooth trunk; C – tree at Calyerup Rocks northern population, showing form and comparison to surrounding *E. occidentalis*; D – buds and fruits; E – three typical seedling leaves; F – selection of adult leaves and mature fruits showing intermediate characteristics of *E. calyerup* (middle), compared with *E. occidentalis* (right) and *E. platypus* subsp. *platypus* (left).

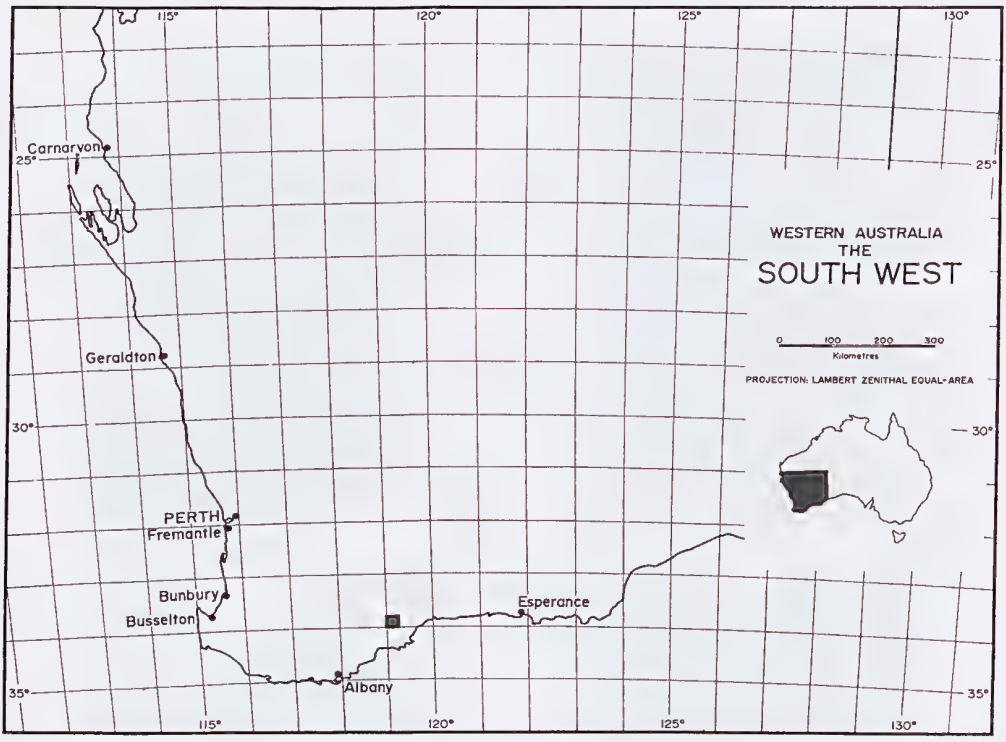

Figure 2. Distribution map for *Eucalyptus calyerup*.

Notes. This taxon differs from one of its putative parents, *Eucalyptus occidentalis*, in its shorter stocking of looser bark, its shorter and thicker leaves, its shorter and stouter pedicels and peduncles, and its less campanulate fruits. From the other putative parent, *E. platypus* subsp. *platypus*, it differs in having a stocking of rough bark, its longer and thinner leaves, its longer and finer pedicels and peduncles, and its very slightly campanulate fruits. Table 1 outlines the differences between the three taxa and Figure 1F shows a visual comparison of their leaves and fruits.

Eucalyptus calyerup has been grown extensively (35,000 in 2000, 20,000 in 2001 and 12,500 in 2002) in the Jerramungup district as a popular local tree that exhibits resistance to lerp attack. The seedlings are thriving thus far, often out-performing other eucalypts. This wide use has assisted its conservation status. It is also undergoing scrutiny as a possible farm forestry subject for its straight, tall and fast growth, and potential timber quality.

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Table 1. A comparison of *Eucalyptus calyerup, E. occidentalis* and *E. platypus* subsp. *platypus* using nine groups of morphological characters.

	Eucalyptus calyerup	*E. occidentalis*	*E. platypus* subsp. *platypus*
habit	mallet.	tree.	marlock.
bark stocking	loosely rough, short, on lower trunk only.	densely rough, long, sometimes extending to lower branches.	absent.
seedling leaves	55–65 x 36–42 mm, blue-green.	60–140 x 30–70 mm, blue-green.	to 70 mm x 40 mm, green, scabrid.
adult leaves	obovate to elliptic-lanceolate, 45–77 mm x 15–36 mm, pale green, veins prominent, reticulation sparse.	lanceolate, 60–160 mm x 10–33 mm, green, veins prominent, reticulation moderate to sparse.	obovate to orbicular, 25–75 x 18–35 mm, olive green to green, veins not prominent apart from midrib, reticulation very sparse, obscured by very numerous, round, island oil glands.
inflorescences	7-flowered; peduncle slightly down-curved, 25–35 mm long.	7(9)-flowered; peduncle down-curved, 10–40 mm long.	7-flowered; peduncle erect or down-curved, 22–60 mm long.
buds	shortly pedicellate, 25–33 x 6–8 mm, scar noticeable, hypanthium slightly 2-winged.	pedicellate, 16–33 x 5–7 mm, scar obscure, hypanthium smooth to slightly wrinkled.	sessile to shortly pedicellate, 20–30 x 6–9 mm, scar present, hypanthium often 2-winged.
flowers	creamy yellow, October to January.	creamy white, November to May.	pale yellow, September to January.
fruit	shortly pedicellate, barrel- shaped to very slightly campanulate, 14–17 x 9–12 mm, disc level to descending; valves 4, slightly exserted.	pedicellate, campanulate, 8–15 x 6–12 mm, disc level to descending, valves, 4, exserted.	sessile, obconical to barrel-shaped, 10–18 x 10–14 mm, disc level to descending, valves 4(5), level or exserted.
seed	dark brown, compressed ovoid, with distinct reticulum.	brown, compressed-ovoid with shallow distinct reticulum.	grey-black, compressed-ovoid with distinct reticulum.

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